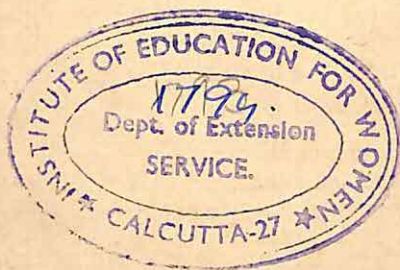


# LOOK AFTER YOURSELF

*A HYGIENE BOOK*

*Written and illustrated by*  
GEORGE H. PUMPHREY



*Leeds*  
E. J. ARNOLD & SON LTD.  
*Edinburgh Belfast*  
*London*

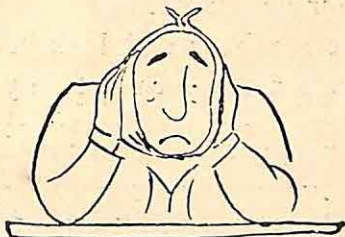
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*A complete list of Arnold Physiology Charts for use with  
this book will be sent free on application*

## I—TEETH



HAVE YOU EVER SEEN A  
BOY IN SCHOOL LIKE THIS?

Have you ever seen a boy in school like this? You know what is wrong with him of course. He has toothache, and it is an ache that he probably deserves. To those of you who have suffered like him this must sound very hard-hearted, but after all, the pain is nothing more or less than your tooth trying to tell you a few home-truths. It is saying,



“Hey! isn't it about time you paid a little attention to me? Here I've been working for you all these years, and what have you done for me? Nothing!”

“I've warned you by giving you little twinges, but you've taken no notice, so now I've had to do this to make you sit up. But believe me, this hurts me more than it hurts you.”

Can you blame the tooth for rebelling? If your toothache has kept you awake all night, you probably will, but that will not help.



THE REBELLIOUS  
TOOTH

Let us see if the tooth has any justification for its lament.



WRITHING  
WITH  
PAIN

Get a mirror and look at your teeth.

If you are about fourteen years old you should have twenty-eight teeth, fourteen in the upper and fourteen in the lower jaw. When you go home, look at your little brother's teeth. If he is six years



LOOK AT YOUR LITTLE  
BROTHER'S TEETH



SOUL LOOKING  
BROTHER

old, or younger, he should have only twenty teeth. These are a special set called *MILK TEETH*. By the time he is twelve they will probably have dropped out, to be replaced by the *PERMANENT TEETH*. If you find your big brother looking very sour about something, ask him if his *WISDOM TEETH* are hurting. These are four teeth which quite often do not appear until the twenty-fifth year. A full set of teeth numbers thirty-two.

You will have noticed that there are different kinds of teeth. Here is a drawing of the four kinds.



INCISOR



CANINE



BICUSPID



MOLAR

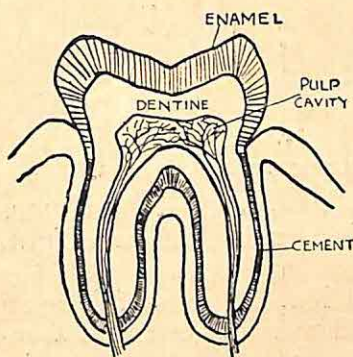
The first one is a *cutting* tooth found in the front of the jaw. The second is a tooth for *tearing* foods.



Its position is just where the jaw turns the corner. The third and fourth are *grinders* and come at the sides, towards the back.

The names of our teeth are :

- 1 *INCISOR* Cutter
- 2 *CANINE* Dog-like
- 3 *BICUSPID* Two-pointed
- 4 *MOLARS* Grinder [*mola* (Latin) a millstone].



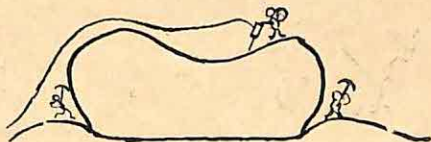
SECTION OF A MOLAR

Let us examine one of these teeth closely. It is fixed into the jaw by a root that has one or more fangs. The top part, or *CROWN*, is covered with *ENAMEL*, a very hard white substance which would never decay if treated properly. Let it become chipped, however, and decay at once attacks the inner part, the

*DENTINE* of the tooth, and soon reaches a cavity in the centre. Here blood vessels and nerves are attacked, when the foolish owner of the tooth begins to writhe with pain. This is toothache!

What causes decay ?

You can be certain that after any meal there are little pieces of food left in the crevices of your teeth. If the food stays there it begins to decay, and acids



GERMS OF DECAY AT WORK

are formed. These acids find the smallest faults in the enamel and steadily break their way through until the whole tooth is affected. If the pulp decays, an abscess generally forms at the root of the tooth.

Even in this sad state a tooth can be saved, but it is much more sensible and much less painful if

DENTIST



DENTIST

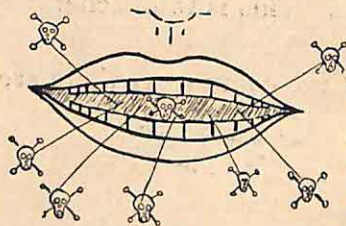


MR. WISE

MR. FOOLISH

the dentist is visited before the pain begins.

Decayed teeth, however, do a great deal more damage than keeping their owners awake all night. Poison from decaying teeth would upset the stomach of the stoutest ostrich. Mouths of decayed teeth provide homes for all sorts of germs. Unfortunately, the people with the unhealthy mouths may not be the ones to catch the disease, but by talking, coughing, or sneezing, they can infect other people. Most of the people with nasty-smelling breath have their bad teeth to blame for it.



SPREADING DISEASE

Many stupid people think that the milk teeth do not matter. Actually they are as liable to decay as the second set, and when they do decay they cause just as many disorders.

The SALIVA in your



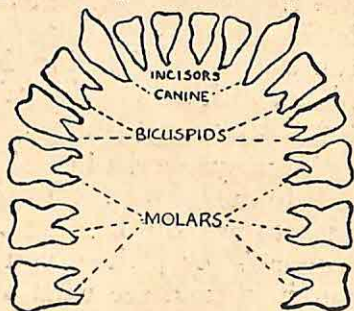
CONSTABLE  
TOOTH-BRUSH  
GERM-SCARER

mouth causes a hard substance called **TARTAR** to be deposited on your teeth. Some people will tell you that this is good. Don't you believe it! Tartar is caused through the bad habit of not cleaning teeth. If it is allowed to remain it will cause pain and inflammation that is difficult to cure, and it can easily lead to the loss of quite sound teeth.

You are now probably beginning to wonder if it is possible to have a healthy mouth at all. Let me hasten to assure you that it certainly is. How?

Well, in the first place, the teeth must be kept clean. A baby should have his cleaned for him until he is old enough to do it for himself. Wash out your mouth at least once a day, and brush your teeth after each meal. It should also be done just before going to bed.

See that your toothpaste has no grit in it. Unfortunately, there are still a few people who have faith in such things as pumice powder, soil, and mixtures of salt and soot for brushing the teeth. Brush your teeth with an up-and-down motion. This will remove any particles lodged in the spaces between them. If you cannot afford a good toothpaste, soap and water with a clean brush will do. Make sure that



PERMANENT TEETH



you do not try to chew anything that will chip your teeth, and remember that it is quite as silly to crack nuts with your teeth as to try to knock a nail in with your fist.

Wise people never give their teeth a chance to hurt them, for they make a habit of visiting a dentist once or twice a year.

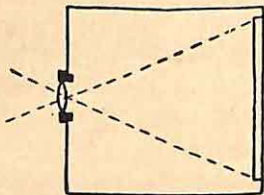
Things like food and general health affect your teeth. These will be dealt with in a later chapter.

## II—EYES



Most of you, at some time or other, will have looked inside a camera. If you have not, do so at the earliest opportunity. When the photographer asks you to "Watch the dicky-bird," he presses a trigger which opens the shutter, and for a split second light passes through the lens into the black box. There it acts on a sensitive plate, set just at the right distance from the lens. When the plate is developed, prints can be taken from it, and you can see yourself gazing down from the top of the piano, with an angelic smile, or a forbidding scowl, for the rest of your life!

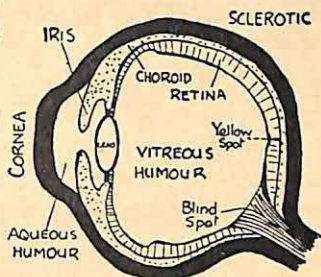
Your eye works in a similar way to the camera. It is a good idea to ask the butcher for a bullock's eye, then you can cut it up and see what a real eye is like.





The eye is almost spherical in shape and has three distinct layers.

The white of the eye, which is called the *SCLEROTIC* layer comes on the outside. It is very tough and will stand a certain amount of strain. The sclerotic layer becomes transparent in front, making a kind of window known as the *CORNEA*.



THE EYE

Inside the sclerotic layer is the *CHOROID* layer. This is full of tiny blood vessels, and its inner surface is entirely black—remember the camera. Under the cornea the choroid becomes the *IRIS* which varies in colour in different people. The central opening is called the *PUPIL*.

The innermost layer is the *RETINA*. It is about one-eightieth of an inch thick and is extremely delicate. It acts like the sensitive plate in the camera. One special spot on the retina, the *YELLOW SPOT*, is arranged at the back of the eye where it can attend to the needs of specially close work like reading and sewing.

The nerves which carry the messages from the eye to the brain are collected together and leave the eye through a cable called the *OPTIC NERVE*. At the spot where the cable leaves the eye, the surface of the retina is broken, so a *BLIND SPOT* is created. You can test this by looking at the two dots with one eye closed.

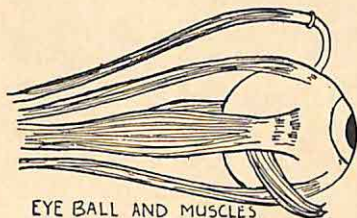
Shut the left eye and watch the left-hand dot carefully. Begin at about four inches and move the

#### BLIND SPOT TESTER

book slowly away. At six or eight inches the right-hand dot will disappear, but it will come back if you keep on moving the book.

Inside the eyeball will be found :—

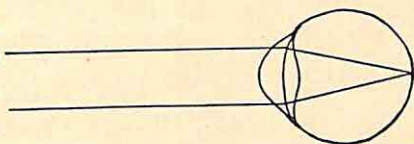
- 1 The **AQUEOUS HUMOUR**, a transparent liquid lying between the lens and the cornea.
- 2 The **CRYSTALLINE LENS**, made of soft living tissue lying right behind the pupil. It is convex on both sides.
- 3 The **VITREOUS HUMOUR**, a transparent jelly-like substance lying behind the lens and filling about four-fifths of the inside of the globe.



EYE BALL AND MUSCLES  
CONTROLLING IT

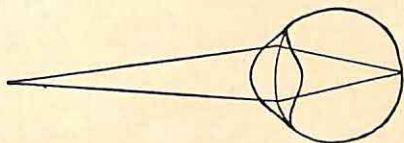
The movement of each eye is controlled by six muscles. Four of them, attached above, below, right and left, help us to turn the eyeball. The other two muscles are arranged slantwise above and below the eye, and allow the eye a rolling action. Inside the eye, muscles control the size of the pupil aperture. These muscles work by themselves according to the amount of light available. In dim light you will find that the pupil becomes larger.

The photographer taking distant views has to alter the distance between the lens and the plate of his camera before he can take a close-up. Our eyes adjust themselves automatically when we look at something far off and then at something a few inches away. They manage this by altering the shape of the lens. For near objects the lens is thickened, and *vice versa*.



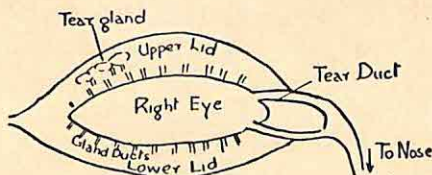
HOW THE EYE FOCUSSES A DISTANT OBJECT

Eyes are strained by giving the eye muscles too much work to do. The nearer an object is to the eye, the greater is the



HOW THE EYE FOCUSSES A NEAR OBJECT

strain on the muscles. If the strain goes on long enough, the sclerotic coat becomes permanently stretched, and we become short-sighted. If you can prevent this stretching from taking place until you are twenty-five years old, then it is possible that you will never become short-sighted, for, in twenty-five years, the sclerotic layer becomes tough enough to take all ordinary strains.

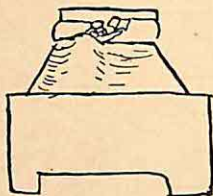


Those awkward drops of water known as tears come from glands underneath the upper eyelid.

Actually they are working all the time and keep the eye moist, so when you blink you give your eyes



a wash and brush-up. The extra moisture goes into your nose through tear ducts at the inner corners of your eyes. That is why you are told to blow your nose when you get a speck of dust in your eye. To stop the moisture from running over, the edges of your eyelids are equipped with oil glands, but of course the oil is no use when you weep.

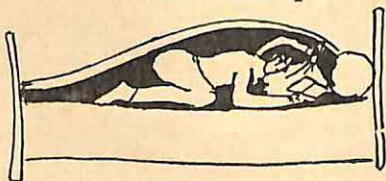


Reading in bed

Look after your eyes carefully, for eyesight is precious. If your eyes are sore and red, if you have to peer or blink, if you cannot see the blackboard or a map clearly, if you suffer from headaches, if you flinch in a bright light, if you have to turn or slant your head to see properly, if you have to hold a book very close or very far away in order to read it, then lose no time in seeing a doctor and telling him about your trouble. He will advise you what to do.

If you have spectacles, for goodness' sake wear them. If you do, it is quite possible that the time will come when you will need them no longer.

Many boys like to read in bed, and some even read under the clothes with a torch. This practice not only prevents them breathing fresh air but is definitely harmful to the eyes.



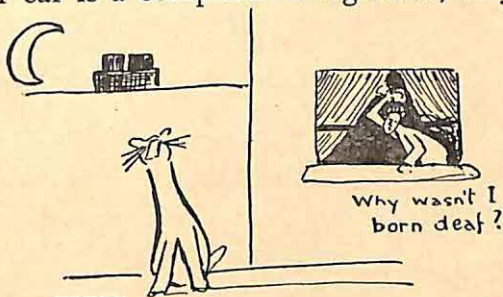
Reading in bed

### III—EARS



If cats ever keep you awake at night, or if your sister is learning to play the piano, then I expect you sometimes wish that your ears were not quite so efficient. But when you hear pleasing sounds like sausages sizzling in the pan, then I am sure you would grudge the loss of the slightest sizzle.

Your ear is a complicated organism, as you can



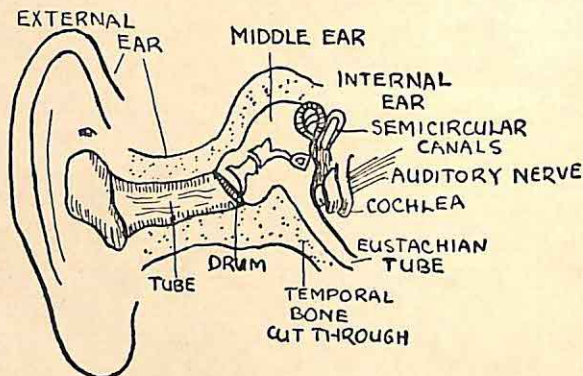
see from the drawing on the next page. You will notice three main sections, the **EXTERNAL EAR**, the **MIDDLE EAR**, and the **INTERNAL EAR**.

The **EXTERNAL EAR** is in two parts. Firstly there are the funny flaps which stick out from our heads and which most people wrongly call ears. These are for collecting



Thank goodness I wasn't born deaf!

the sound waves. Secondly there is a tube about one inch long, leading to the other parts of the ear. This tube is equipped with small hairs, and glands which produce wax. The hairs discourage adventurous insects, while the wax is a protection against bacteria. At the inner end of the tube is the **EAR DRUM**, a thin membrane set at an angle.



From the floor of the **MIDDLE EAR** runs a tube, the **EUSTACHIAN TUBE**, which opens into the **PHARYNX**, the windpipe. This tube keeps the air pressure balanced on both sides of the ear drum. If you catch a bad cold, or have adenoids, then the Eustachian tube becomes blocked, the outside air presses on the ear drum, it ceases to vibrate and you become deaf until the obstruction is cleared.

Three small bones, delicately joined together, run through the cavity. One end is connected with the ear drum while the other end fits into an opening which is separated from the internal ear by a membrane.



The *INTERNAL EAR*, or labyrinth, is very important and very complicated. It is filled with a watery liquid and contains three curved tubes called the *SEMICIRCULAR CANALS*, and the *COCHLEA*, which is shaped like a snail's shell. The inner wall is pierced by the *AUDITORY NERVE*.

The semicircular canals seem to be the organs responsible for telling us whether we are on our head or our heels, for if they are destroyed in animals the poor beasts lose their sense of balance.

What then happens when we hear a cat wailing ? The waves of sound are collected by the external ear and conducted along the tube until they reach the ear drum which vibrates. This causes the three bones in the middle ear to vibrate, and they in turn send the vibration on to the outside fluid of the internal ear. The inner fluid is affected and the stimulation is transmitted to the auditory nerve which carries the message to a special part of the brain, and it is there that we really hear that wailing cat !

People often become deaf because their wax glands are too active. A syringe with some warm water will get rid of the wax in a very short time, but your ears should never be poked. It is dangerous because you might damage the ear drum. Adenoids blocking the Eustachian tube are another common cause of deafness.

If you suffer from earache and there is some discharge from the ear, you should lose no time in doing something about it. What has probably happened is that bacteria have made their way

through the Eustachian tube and set up inflammation in the middle ear. In serious cases *PUS* is formed, the drum is perforated and the pus comes out of the outer ear. If treated immediately it can probably be cured and the drum will heal. But if left, it will become more and more difficult to treat and will lead to permanent deafness. It might even lead to death, for the pus is quite capable of eating through the bone separating the ear from the brain and of forming an abscess.

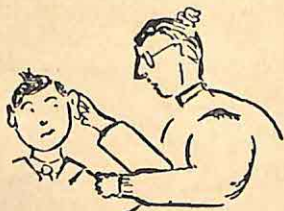
#### IV—YOUR SKIN

##### AND HOW TO LOOK AFTER IT



When I was a boy, I often stayed with an aunt who had the annoying habit of asking if I had washed behind my ears. I always felt very indignant because, in common with all other boys, that was a part to which I paid particular attention. It was a sort of certificate. If that part was passed as clean you were not sent out to wash again.

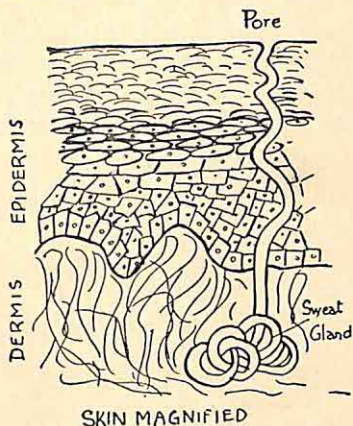
Nowadays I'm on the side of the aunt, but I'm more particular than she was, and a peep behind the ears doesn't satisfy me. I demand cleanliness all over! In this chapter you will discover the reason for this extraordinary demand.



No, really Aunt!



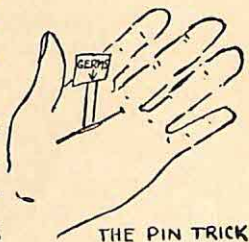
Our skin is of great importance to our health and well-being. It gives us protection, it helps us to get rid of certain impurities from our bodies, and through it we are able to feel things and get rid of waste heat.



If we cut through some skin and examine it with a powerful magnifying glass we see that it is made up of two layers. The outside of the outer layer is quite tough and varies in thickness in different parts of the body. To prove this, compare the skin on the sole of your foot with the skin on the tip of your nose.

The inner part of the outside layer determines our colour, and it is the pigment of this part that makes a negro black. The outer layer is the part that swells out to make a blister. This layer has no nerves or blood vessels. Perhaps you have seen a very stupid boy pushing a pin through the skin on his hand. It does not hurt, but to complete the job he should print a notice, "To all germs, this way in. Admission free."

The second layer is the true skin, and contains blood vessels, nerves, glands, and root hairs. The glands are of two kinds, SEBACEOUS glands and SWEAT



THE PIN TRICK



glands. The sebaceous glands give out a fatty substance which softens the skin and hair. They are usually found at the base of a hair.

The sweat glands give out a liquid, mostly water. In twenty-four hours they get rid of about one pint. Look at the surface of your skin through a magnifying glass. You will see that there are thousands of little holes or PORES in it. On the palms of the hands there are about 3000 to a square inch, but in the back and legs this number is reduced to 600. These pores are the outlets of the sweat glands which are connected to the outer skin by tubes.

Although we may not be aware of it, our bodies perspire all the time, the liquid evaporating into the air. In hot weather or after strenuous exercise the perspiration becomes visible. As it evaporates it absorbs heat and helps us to cool down.

### LOOKING AFTER THE SKIN



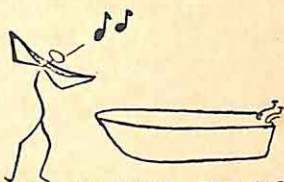
ESSENTIAL FOR CLEANLINESS

If you leave your skin uncleaned for any length of time, you will soon have it covered by a kind of plaster made up of sweat, grease, and scales of dead skin. To this, of course, will stick any dirt or dust that happens to be flying about.

This plaster will obstruct the sweat glands and stop them from working efficiently ; it will do the same to the sebaceous glands and cause blackheads as an outward and visible sign. It forms a happy hunting-ground for germs, especially those of skin diseases, added to which it soon reaches the stage

when it smells, and you get that horrid odour that dirty people carry round with them. And lastly, dirty people encourage parasites.

This greasy dirt cannot be removed by water alone; soap must be used in addition. It is hopeless, too, to use anything but warm water. You should



have at least one hot bath a week. This hot bath is safest taken last thing at night, for it leaves the skin liable to take a chill.

Wash your face and neck twice daily. Your hands, for obvious reasons, should be washed before each meal, and if you are doing a dirty job, oftener. The cold daily bath is a tonic, but if you don't feel like two eggs for breakfast after it, ask your doctor if it is good for you. It does not suit everyone. In any case, remember that it is a tonic and not part of your cleansing operations.

Sea-bathing in the summer is a similar kind of tonic, but you are asking for trouble if you bathe either after a heavy meal or when you are hungry. The best time is probably at eleven o'clock in the morning. The swim before breakfast is another of those pastimes for tough people. It can do much harm to others.



Disappointing as it may sound, you should not stay in the water for more than five or ten minutes. Many

I'm NOT cold  
I've only been in  
half an hour



people can stay in longer and show no ill-effects, but if you get a chilly feeling, and a general blueness about the complexion, then you will know that you have been in too long.

When talking about the horrid greasy plaster that dirty people carry about with them mention was made of *PARASITES*. These horrible creatures prefer people who are not clean, but as you no doubt know, perfectly clean people can catch them from dirty people. In case you are attacked you should know what to do about it.

A look-out needs to be kept for body parasites, of which there are four kinds.

The *FLEA* is a small flat creature which can jump several inches. It is found in clothes and bedding, and lives by sucking the blood of the person who gives it a home. The flea's eggs are laid on the floor of the room in cracks and crannies.

To get rid of fleas, keep the floor perfectly clean, and if necessary wash out with a mixture of paraffin and soft soap. Insect powder is useful and bedding must be carefully examined.

The *BED-BUG* has a distinct smell and lives in the walls and floors of houses. It feeds on human blood, and attacks its victim during the night. It can pass through from one house to another and it sometimes appears in the cleanest homes if there are dirty neighbours close by. The main reason for the pest is generally that the building is in a bad state of repair. The remedy is to paint the boards with strong carbolic acid and carry out repairs where necessary.

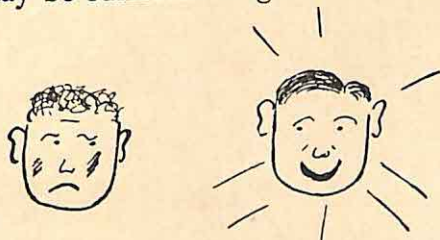


The *HEAD-LOUSE* lives in the hair and can be easily transferred from one person to another. It bites the scalp to get blood, and sets up irritation which makes people scratch. Eggs in the form of *NITS* are attached to the hairs.

If you are unfortunate enough to get one of these head-lice or even if your head tickles, get your mother to comb your hair with a fine comb. If you have been foolish enough to let the creatures get to the egg-laying stage you will find it difficult to remove the nits, and you may have to use warm vinegar. Short hair is the best protection against this pest. Girls who have long hair should wear it in two plaits.

The *BODY-LOUSE* lives in the creases and folds of clothes and lays its eggs there. Its bite causes great irritation. It is possible to get these lice from close contact with a victim or his clothes.

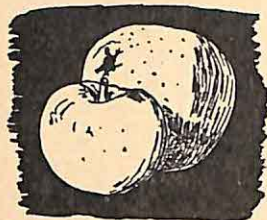
The only sure remedy is for the whole family to have disinfecting baths, and to have their clothes and bedding disinfected with hot steam. If there are very few lice, a hot iron applied to the seams of clothes may be sufficient to get rid of the pest.



BEFORE AND AFTER

READING THIS CHAPTER

## V—WHAT HAPPENS WHEN WE EAT



Now we come to something which I am sure you will agree is very important—eating.

Eat properly, and all will go well, but eat wrongly, and your inside will revolt and give you trouble.

Let us follow a mouthful of food and see exactly what happens to it.

First of all it is thoroughly broken up by the teeth and mixed with *SALIVA*. This saliva acts on the starch in food and changes it into sugar. The moisture helps the chewing and brings the food into contact with the parts of the tongue that help us to taste.

When the food has been chewed it passes down a tube called the *OESOPHAGUS* to the *STOMACH*. In the stomach the food is mixed with an acid fluid called *GASTRIC JUICE*. Certain changes take place, and it then passes into the *SMALL INTESTINE*, a coiled tube about twenty-one feet in length. Here the digested food is absorbed and the *INTESTINAL JUICE* completes the digestive process. Lastly comes the *LARGE INTESTINE*, a tube about six feet in length, ending on the surface of the body. Its chief function is to absorb any useful material and water left in the original mouthful of food.

The *LIVER* and the *PANCREAS* supply the small intestine with two important liquids, *BILE* and

**PANCREATIC JUICE**, respectively. These are essential for the proper digestion of food.

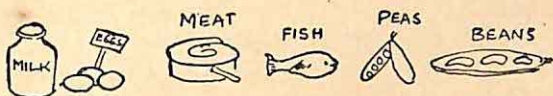
What about the different kinds of food? You will have often been told that this or that food is "not good for you." Read on, and you will probably find out why you were told so.

The important thing about diet is that it should be balanced. This means that we must find the different foods which will supply our bodies with what we need, and eat these foods in reasonable quantities.

Foods are divided into the following classes:—

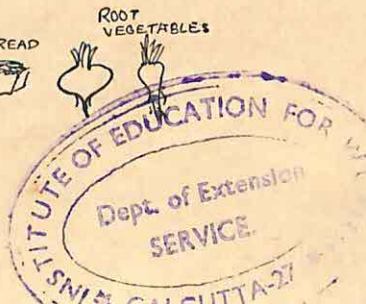
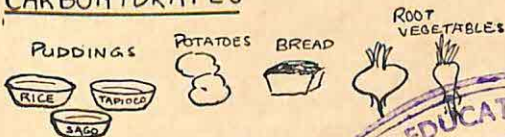
- 1 **PROTEINS** The only foods from which we get nitrogen. Eggs, milk, meat, fish, and peas, beans and lentils contain proteins.

### PROTEINS



- 2 **CARBOHYDRATES** The sugary and starchy foods, such as rice, tapioca, sago, potatoes, bread and root vegetables. These foods produce heat and energy.

### CARBOHYDRATES





- 3 **FATS** These also produce heat and energy. They repair the fatty tissues and aid digestion. Examples are butter, cream, and the fat of animals, fishes, and birds.

FATS

BUTTER



CREAM



FAT MEAT



- 4 **MINERAL SALTS AND ACIDS** These are necessary for the blood, the digestion, and the bones. We obtain them from green vegetables and fruit.

MINERAL SALTS & ACIDS

FRUIT

APPLE



ORANGE



GREEN VEGETABLES



- 5 **WATER** Next to the oxygen which we breathe, water is the most essential requirement for human beings. It is present in most of our foods and in all things we drink. Seventy per cent of the weight of our bodies is water.

WATER



- 6 **VITAMINS** These are very important, for without them we should soon die. How they act is not known, but by experiments on animals and by observation of human beings it has been found that they are essential to life. Vitamins need careful handling, for not only are they soon destroyed, but they are present

only in very small quantities, and drying, cooking, and heating will often kill them.

For convenience the vitamins have been called A, B, C, and D.

### VITAMINS



GROWTH



NERVES



PREVENTS  
SCURVY



FOR  
CHILDREN

*Vitamin A* is essential for growth. Without it, vitality is lowered and the resistance to disease and infection undermined. Eggs, butter, milk, cod-liver oil, animal oil, fat, liver, kidney, and fish-roes contain Vitamin A.

*Vitamin B* keeps the nervous system in order. We find it in peas, beans, lentils, liver, kidney, heart, fish-roes, and egg yolk. Lack of Vitamin B leads to beri-beri.

*Vitamin C* is contained in green-stuff, fresh fruit and juice, roots, milk, and meat. Without it, scurvy is developed. In the old days sailors at sea often suffered from scurvy. You can understand why.

*Vitamin D* is generally found in association with Vitamin A in egg yolk, cod-liver oil, milk, and butter. It prevents the softening and bending of bones, and is very necessary for young children.

The tinning of food often leads to the destruction of the vitamins by reason of the high temperatures used.

White flour is also deficient in vitamins because efficient milling has removed both the germ and the outer layers of the seed. Wholemeal and brown bread contain vitamins.

It is very important that food should be kept clean. It must be carefully protected from dust, dirt, and insects. Flies, particularly, should be given no chance to settle on it.

To get the best out of your meals you should attend to the following rules:—



Food must be chewed thoroughly and slowly.

Reading at the table is not only bad manners, but it is bad for the digestion.

A bright, cheerful atmosphere during meals helps greatly in the enjoyment of the food, and ensures that the greatest benefit is derived from it.

Large quantities of fluid should not be taken during meals, for the gastric juice naturally cannot work so well if it is diluted.

Don't rush away straight after a meal. A short rest will help a great deal in the process of digestion.

Meals should be taken at regular times. It takes about four hours for the stomach to deal with food, so that should be the minimum interval between meals.



Three meals a day are sufficient. Some people enjoy supper at night, but if no supper is taken, tea should be a substantial meal.

DON'T OVER-EAT



Don't over-eat; over-eating will not only make you horribly fat, but it causes all sorts of troubles. No doubt you have memories of the day after some party when you were not too careful about this.

Drinks are very important. You have already learned something about the importance of water.

Water is valuable in other ways too.

- (a) It dissolves digested food and helps in its absorption.
- (b) It keeps the blood fluid. Eighty per cent of the blood is water.
- (c) It helps to remove waste matter.

Three-and-a-half to five pints of water a day are lost through the skin, lungs, kidneys, and intestines. About a third of this amount is present in the food we eat, so the rest must be replaced by drinking.

Most people drink tea, coffee, or cocoa. If made properly, that is, brewed for five minutes and not allowed to stand, tea can be quite good for you. It is probably one of the best pick-me-ups we have. Excess in tea-drinking, however, upsets the nerves and digestion. Do not drink your tea too hot, or too strong and unsweetened, or with meat.

Coffee is a similar sort of stimulant, but is very harmful when taken in excess. Cocoa is not so stimulating as the other two, but it has a definite food value.

Alcoholic drinks should be avoided; they make people fat and liable to gout and rheumatism. For

a time they stimulate the heart and breathing, but this soon passes off. Some people are still foolish enough to believe that alcohol "keeps the cold out." In fact, it does the very opposite, it causes a rush of blood to the skin. This means that heat is given off in large quantities, so that the body loses heat and the person is then liable to catch cold.

Under the influence of alcohol, mental and muscular work is of poor quality, while the acuteness of the senses is diminished.

Alcohol has no value as a food. It shortens life, while excessive drinking of it causes disease in various organs.

A child should never touch it.

## VI—FRESH AIR

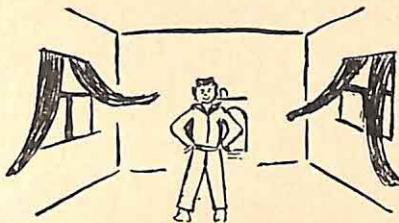


Many foreigners seem to have the idea that all Englishmen love fresh air. They probably imagine us as in the first picture on the next page, whereas the second picture is probably true of many of us.

The idea has no doubt survived from the time when foreigners came to England and found cold, draughty living-rooms, and colder and draughtier bedrooms, so they naturally went home with the idea that we really liked living under such conditions.

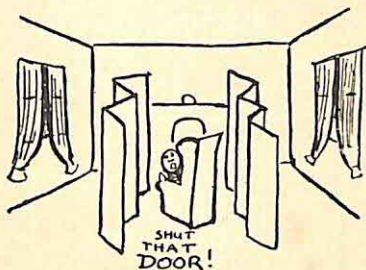
Only last year, a Swedish friend of mine told me how astonished he was to find that English people still retire to bed in icy cold bedrooms.

In Stockholm, he said, in spite of icy weather and a couple of feet of snow, he could retire to bed quite comfortably, and have his window open, because his house was centrally heated.



WHAT FOREIGNERS THINK

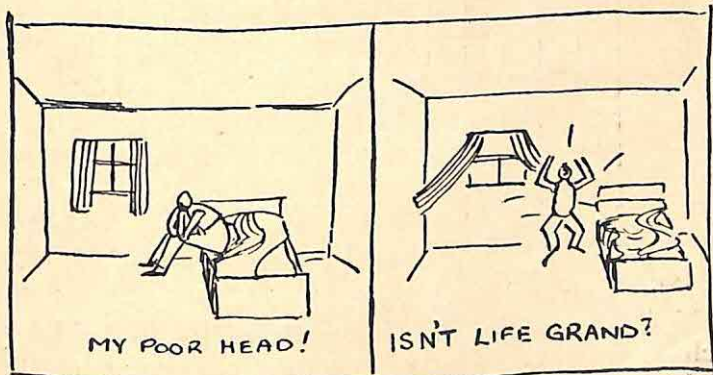
You have all been told at some time how important it is to get out into the fresh air, especially if you have been ill.



REALITY

Why does this fresh air do the invalid good? Why do we eat twice as much if we have

been out in the fresh air? Why do we wake up



MY POOR HEAD!

ISN'T LIFE GRAND?

GETTING UP IN THE MORNING



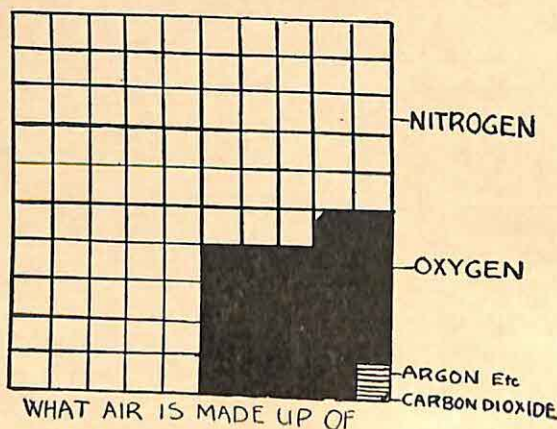
with a headache if, by accident, we have forgotten to sleep with the bedroom window open?

The air we breathe is made up of certain gases.

In a hundred parts of air, the proportion of gases is :—

NITROGEN	..	..	78.09
OXYGEN	..	..	20.94
ARGON	..	..	.94
CARBON DIOXIDE	..	..	.03
			<hr/>
			100.00

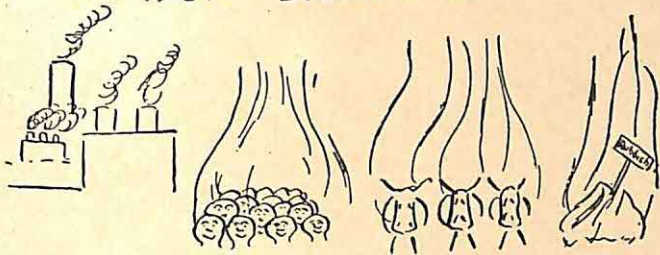
Besides these gases there will also be found water vapour, ozone, ammonia, acid gases, and small floating objects like smuts.



Nitrogen and argon are both "dead" gases. Their chief purpose in the air seems to be to hold in check their very "live" partner, oxygen, without which all living things would die.

Carbon dioxide is also a "dead" gas. Enormous quantities of this gas are poured out into the air daily. All ordinary burning and decay produce

## CARBON DIOXIDE

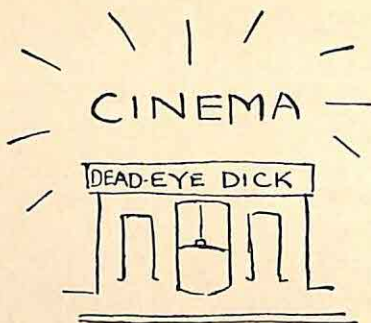


it, as do animals, and at night plants breathe it out.

You are probably wondering how much room is left for the other gases, but Nature provides a balance, for on all days when the sun is shining, the green parts of plants take in carbon dioxide. They keep the carbon for growing purposes, and give the oxygen back to the air. However, plants, like animals, give off carbon dioxide at night.

Watch a ray of sunlight coming through the window. Do you see the hundreds of tiny particles floating about in it? They consist of things like salt, coal-dust, seeds of plants, sawdust, straw, cotton, scales of skin, hair, and germs of disease, especially of tuberculosis, smallpox, and scarlet fever. In certain trades like tin-mining, needle-making, cutlery, and cement-making, impurities get into the atmosphere which, if breathed in, irritate the lungs and set up disease.

If you have ever been in a crowded room with all the windows shut, you will know how quickly



No thanks  
I've got  
a  
COLD

the atmosphere becomes hot and uncomfortable, and how soon you get a headache and even feel slightly sick. You will have found, too, how soon fresh air revives you : it acts like a magic charm. Just watch the effect of fresh air on any person you see fainting.

The discomfort in a crowded room is caused by the heat and moisture given off by human bodies. In time, the heat and moisture become so troublesome that they prevent the body from giving off any more, so bodies grow hotter but cannot get rid of the heat. At the same time the skin stops getting rid of the impurities it normally

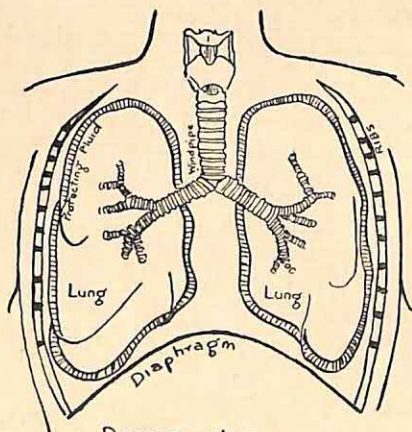


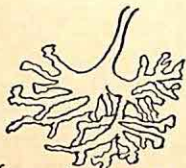
Diagram showing  
position of Lungs



rejects. The poisons stay in the body, enter the blood stream and set up all kinds of disorders.

The Black Hole of Calcutta is a terrible example of this. Of the one hundred and forty-six people imprisoned in a cell eighteen feet square with only two small windows, one hundred and twenty-three died, and even of the twenty-three people who survived, several died later of the poisonous after-effects.

Every person is responsible for the air he breathes out. If he has an internal disease which causes him to breathe out germs, then he is criminally negligent if he frequents places where his germs are likely to be breathed in by others. Remember this next time you have a cold and feel like going to the cinema.



End of an air Tube in the Lungs

Let us see how the air is dealt with when it gets inside our bodies.

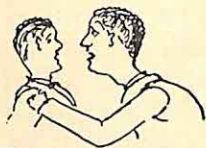
First of all it should make its entry through the nose, for there we have special hairs to stop impurities, and special passages where blood moving through veins near the surface warms the air.

Passing down the windpipe the air reaches the lungs, where it goes through a network of smaller and smaller tubes which finally end in a large number of tiny balloon-shaped chambers. Here the air is separated from a close net-work of tiny blood vessels only by a very thin delicate partition. Oxygen and carbon dioxide can pass through this membrane. The blood gets rid of the carbon

dioxide and takes oxygen from the air. The purified blood then circulates through the body using the oxygen for oxidising waste matter.

We breathe in by lifting the *DIAPHRAGM* and expanding the *RIBS* and *STERNUM*, i.e. the breast-bone. Breathing out is caused by the natural elasticity of the lungs and the weight of the ribs and sternum.

When we cough or sneeze, or even talk, moisture from our mouth is discharged in a spray as "droplets". You can prove this by coughing on to a sheet of glass or a mirror. Droplets always contain microbes, and if the person responsible has an infectious disease, that is a sure way of spreading it. So he should always use a handkerchief and refrain from talking in the face of another person. At night the sufferer should have a bed to himself, and this should be reasonably distant from other beds.



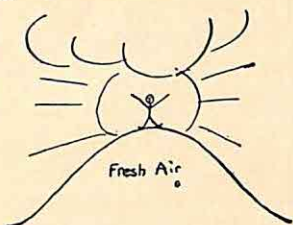
Don't talk in his FACE

In towns it is often difficult to keep windows open because the atmosphere contains so much unclean material. Most of it is from coal burnt in open grates, and consists of dust, soot, and tarry matter. In London, it is estimated that in one year six hundred tons of this material is deposited per square mile.

Smoke always makes fogs worse, and fogs have never been good for anybody's lungs. Sunlight is cut off and windows have to be kept closed.

Smoke represents so much wasted money, for had the coal it came from been treated properly, many valuable materials could have been extracted. Loss of sunlight means the use of more artificial light. Traffic is held up by fog. The faces of buildings are damaged, while trees and other vegetation suffer greatly.

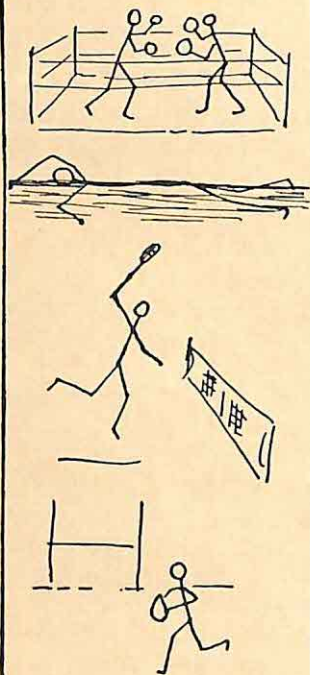
Clothes, household linen, paintwork, wallpaper, all suffer. To prevent this, gas, anthracite or coke should be used instead of coal. There should be more central-heating, and stoking should be done mechanically.





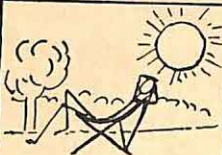
## VII—THINGS YOU SHOULD SEE TO

### EXERCISE



Exercise, rest, and sleep are probably the three things that people make most mistakes about, yet they are very important if we are to live happy, healthy lives.

Have you ever seen pictures of those strange people in India who make a vow never to use an arm or a leg? If you have, you will have noticed that the unused limb has become nothing but skin and bone. The same sort of thing will happen to any of our limbs if they are not used. Nature is very just. If we do not use the wonderful things she has provided us with, she takes them away.



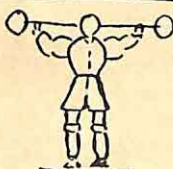
REST



9 hours

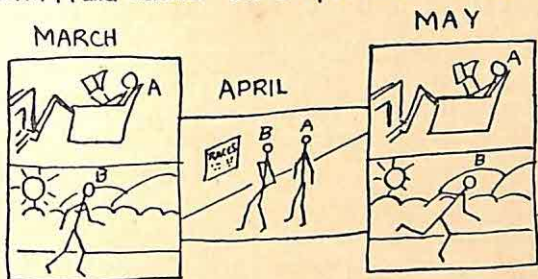


SLEEP



RESULT

John A and Jack B enter for the RACES

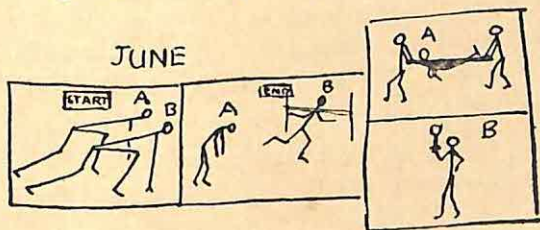


So we must take plenty of exercise. Children and young people are particularly in need of it, and should get out into the fresh air and play games as much as possible. But see that you get your fresh air by breathing it in through your nose!

Care must be taken, however ; too much exercise is quite as bad as too little.

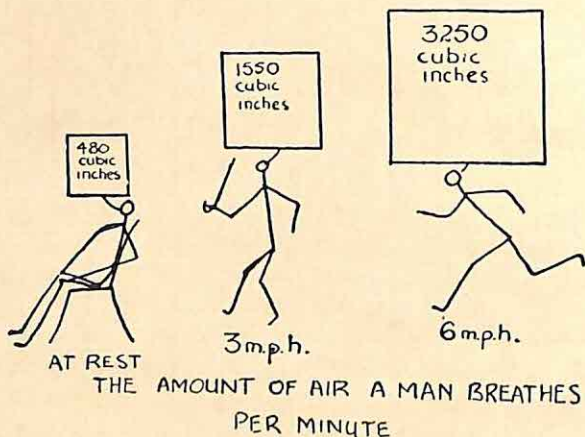
In the first place, it is no use taking exercise in fits and starts ; it must be done regularly and systematically. Go slowly at first, and then you will have the pleasure of watching your muscles grow.

Be careful what sport you take up, because certain sports develop only one set of muscles.



Swimming, boxing, tennis, and Rugby football are amongst the best for all-round development.

If you are going to play games see that you are in proper training. To ensure this, all you need is an outdoor life, good nourishing food, and exercise



for all your muscles. Violent and sudden exercise is very dangerous for the untrained, because it strains the heart.

Exercise not only strengthens your muscles but gives you better control of them. It makes the heart beat more quickly and the lungs take in more air. At rest, a man breathes in 480 cubic inches of air a minute ; when walking at three miles an hour, 1550 cubic inches ; and when walking at six miles an hour, 3250 cubic inches.

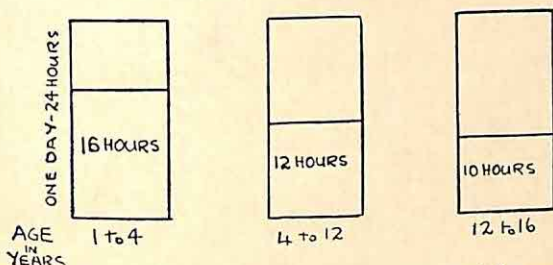
During exercise, the sweat glands act more freely, and by means of the perspiration the body rids itself of waste materials.



Exercise makes us feel that life is worth living. It strengthens the nervous system, improves the appetite and digestion and makes the kidneys and bowels act efficiently.

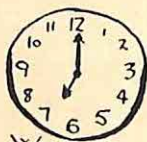
Our bodies are constantly wearing out, so we must rest them. The best rest is deep, healthy

### SLEEP NEEDED



sleep. Most grown-ups can manage with seven or eight hours' sleep, but children, because their bodies work at a greater rate, must have more sleep. Up to four years of age, sixteen hours' sleep a day is necessary; from four to twelve years, twelve hours; and from twelve to sixteen years, ten hours.

Your bedroom should be quiet and well-ventilated. Do not sleep on the floor, for dust, gas, and stale air tend to collect there. Feather beds



Work by  
this



and avoid THIS

are beautifully comfortable, but they are not nearly so healthy as hair mattresses.

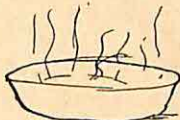
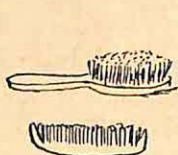
Do you wake up, have breakfast, and get to school about the same time every morning? If you do, you have formed good habits. Good habits are the reward that sensible people get for taking the trouble to train themselves. A good habit is like some marvellous machine that works of its own accord. Besides, once you have it, it will serve you all your life. Have you formed the habit of getting your meals at regular times? Do you eat slowly, and chew thoroughly? Do you clean your teeth, wash yourself, and see that your bowels act properly? The bowels should be opened freely at least once, at the same time, each day. If they are not, all sorts of ills will result. Exercise and correct food will make medicines rarely necessary. Correct food should contain Vitamin B. This is to be had in wholemeal bread, salads, vegetables, and fruit.



LEAVE TOBACCO ALONE

Leave tobacco alone when you are young, for it interferes with digestion and growth.

If you want your hair to be healthy and to look its best, use your brush and comb thoroughly every day. Keep the head



NOT TOO MUCH SOAP



HEALTHY HAIR

clean by washing it regularly once a week. It is not necessary to use much soap. A little vegetable oil is harmless and helps to prevent dandruff.

## VIII—FIRST AID



Have you ever heard that saying, "There is no such thing as an accident?" Think about it for a moment, and you will see how true it is. Almost every so-called accident is due to someone's thoughtlessness or carelessness, so don't act foolishly or someone is likely to get hurt. It is always better to be safe than sorry. However, if other people do foolish things and get into scrapes, then we must help them.

It is quite possible that at some time or other a person's life may depend on what you do, so keep your head, think quickly and clearly, and do not be afraid of the sight of blood. You will always be coming across small injuries such as cuts and bruises, but be prepared for larger things. Remember, however, that you are giving first aid and that the important thing is to get a doctor.

**BLEEDING** Here you must stop the flow of blood and prevent blood-poisoning. Small, clean cuts or scratches should be simply treated with iodine, padded with a piece of clean linen, and bound up with clean rag or bandage. A small cut that is dirty should be first cleansed with warm water and clean rag



Where the wound is deeper, a hard pad of boracic lint should be bandaged tightly over the place. Deep wounds need the doctor as soon as possible. Notice that everything used must be scrupulously clean. Never give brandy ; it will simply start the bleeding again.

A bleeding nose can generally be stopped by seating the patient in the open air, with his head slightly back, his arms raised, and all tight clothing loosened. A sponge dipped in cold water should be applied over the nose and at the back of the neck. Tell the patient to breathe through the mouth.

**BROKEN BONES** which *must* be treated by the doctor immediately can usually be detected by

- (a) the patient's inability to move the limb
- (b) the shape of the limb—it becomes shorter
- (c) the pain and swelling near the break

Make the patient comfortable but do not move him. Send for the doctor immediately.

**DISLOCATIONS** are the result of joints becoming displaced. There is pain and swelling, and the joint looks unnatural. Shoulders, elbows, thumbs, fingers, and the lower jaw are the parts where dislocations are commonest. Cold water bandages and, if these fail to give relief, hot fomentations are the best treatment. Send for the doctor.

**SPRAINS** are due to the stretching of ligaments. Treat them as for dislocations. Rest is the only cure for sprains.

**BRUISES** are best treated by a first application of cold water and, later, by bathing with warm water.

**BURNS AND SCALDS** Remove the clothing from the part affected, and cut round any material that is stuck to the wound. Cover the wound with pieces of linen or cotton smeared with boracic ointment or soaked in a solution of bicarbonate of soda. Cover the whole with a thick layer of cotton wool. Keep the patient warm. The old treatment of covering the wound with oil has fallen into disfavour because of the danger of septic poisoning.

*If your clothing catches fire do not rush out into the street. That will only fan the flames and make them burn more fiercely. Roll over and over on the floor. This will put out the flames. If you see somebody else's clothes on fire, wrap a coat, mat, rug, or blanket round the person and roll him or her about on the floor until the flames are extinguished.*

**BITES AND STINGS** A dog bite is more serious than some people believe, for it can easily become septic. Let the wound bleed, and then cleanse it with an antiseptic.

The only poisonous snake in this country is the viper, and its bite seldom causes death. A piece of string tied tightly above the wound will prevent the poisoned blood from getting into circulation.

Bee and wasp stings are painful, but seldom serious unless the sting is on the lips. Squeeze the part firmly to get rid of the sting and as much poison as is possible.

**FOREIGN BODIES** If something gets in your eye, do not rub it. Try blowing your nose. In persistent cases get someone to roll back the upper eyelid over a pencil or a matchstick. The body can then be removed by brushing the lid lightly towards the nose with a clean hairbrush or a damp corner of soft linen. Where treatment of this kind is unsuccessful, put a drop of clean castor oil in the eye, bandage it up lightly and go to the doctor.

If your little brother or sister has pushed something into his or her ear, try to float it out with oil. Never probe the ear.

Sometimes young children push things up their noses. In this case they should be told to blow hard down the affected nostril. If that fails, a sneeze caused by snuff or pepper will often remove the obstacle.

If something gets stuck in the throat, try to hook it up with a bent finger. Should this make the patient sick, so much the



better. With young children, the old method of holding them upside down by the heels and patting the back is often effective.

**DROWNING** Occasionally somebody gets into difficulties in the water and is brought out unconscious. His life can often be saved by *artificial respiration*. Learn how to apply this from your swimming master. Warm blankets and hot water bottles are needed when the patient comes round.

**UNCONSCIOUSNESS** It is a safe rule to lay the patient flat on the floor where there is a good supply of fresh air. Loosen tight clothing. If the face is pale the head should be kept low. If it is flushed it should be raised.

*Fainting* is the most common form of unconsciousness. Let the patient lie flat and keep the head low. It is often effective to let the patient sit and to push the head gently between the knees. See that there is a good supply of fresh air and let him smell some sal volatile.

**SUNSTROKE** is caused by exposing the head when the sun is too hot. The patient feels sick, faint, and giddy. He looks hot and flushed and asks for a drink. Sometimes he becomes unconscious. When this is the case, he should be laid in a cool, shady place, stripped to the waist, and should have cold water applied to his head and neck. When

consciousness returns, the patient should be given cold water to drink, and a cold wet towel should be placed on his head.

**POISONING** In cases of poisoning send for the doctor immediately, stating if possible the poison taken. If the lips and tongue are swollen, burnt, and blistered, and swallowing and breathing are difficult, do not give an emetic, for the poison is probably strong acid or alkali which, being vomited, will burn the mouth and gullet of the patient a second time. An acid can be neutralized by washing soda or bicarbonate of soda in milk. An alkali can be neutralized by vinegar and water. In both cases, treatment should be followed by a soothing drink of olive oil and milk. If there is no sign of burning, then it is probably safe to give an emetic—a teaspoonful of mustard or a tablespoonful of salt in a tumbler of warm water. This should be followed by a soothing drink.

If the patient has taken a narcotic, that is, a drug that produces drowsiness and sometimes deep sleep ending in insensibility, he must be kept awake, so walk him up and down, shout at him, slap his face, do anything, in fact, to stop him from going to sleep until the doctor arrives.

**BANDAGES** In First Aid treatment bandages play an important part, and you should know something about them. Here you see

diagrams of the Triangular Bandage, which is used

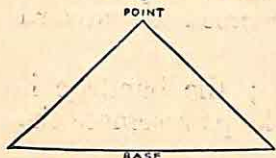


FIG. 1. BANDAGE SPREAD OUT.

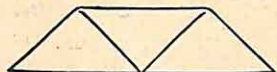


FIG. 2. BANDAGE ONCE FOLDED

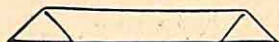


FIG. 3. BROAD BANDAGE

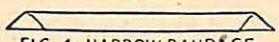


FIG. 4. NARROW BANDAGE

- (1) to keep splints or dressings in position
- (2) to afford support to an injured part or as an arm sling
- (3) to make pressure in order to reduce or prevent swelling

To make a triangular bandage cut a piece of linen or calico about forty inches square diagonally into two pieces (*Fig. 1*).

A broad bandage is made by bringing the point of the material down to the base as shown in *Fig. 2*, and then by folding into two as shown in *Fig. 3*.

A narrow bandage is made by folding the broad bandage once as in *Fig. 4*.

In an emergency, bandages may be made from handkerchiefs, belts, or any material that is handy.

Roller bandages, made in various widths of woven cotton, flannel, or other suitable material, are also of great use.

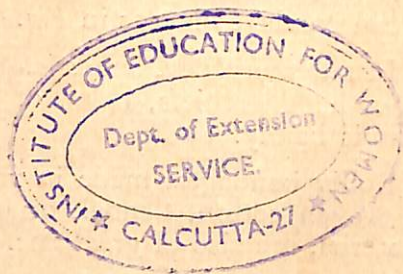
There are four chief ways of applying the roller bandage.

- (1) The simple spiral ; the part is encircled with the bandage several times



- (2) The reverse spiral; in each spiral turn the bandage is reversed downward upon itself
- (3) The figure-of-eight; the bandage is applied so that the loops resemble the figure 8
- (4) A modified form of the figure 8 used for bandaging the shoulder, groin or thumb

You should remember always to bandage from below, upwards, and from within, outwards over the front of a limb. Apply each layer of a bandage so that it covers about two-thirds of the preceding layer. Be sure to apply the bandage firmly, but not tightly enough to stop the circulation, and fix it securely when it is finished.



- (2) The reverse spiral; in each spiral turn the bandage is reversed downward upon itself
- (3) The figure-of-eight ; the bandage is applied so that the loops resemble the figure 8
- (4) A modified form of the figure 8 used for bandaging the shoulder, groin or thumb

You should remember always to bandage from below, upwards, and from within, outwards over the front of a limb. Apply each layer of a bandage so that it covers about two-thirds of the preceding layer. Be sure to apply the bandage firmly, but not tightly enough to stop the circulation, and fix it securely when it is finished.

